ATSR 6. Sources on Art Technology: Back to Basics
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DOCUMENTATION OF RECEIPES OF GLUE LINING PASTE FOR LININGS IN EUROPE

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INTRODUCTION

Objectives of the study: In this poster, some results obtained in the documentary phase of the project I+D+I **"Materials and methods of pasta linings for the reinforcement of canvas paintings: documentation, functionality and conservation" (ref: HAR2011-24217),** funded by the Ministry of Economy and Competitiveness of Spain, are presented. Its main objective is the study of traditional lining with glue paste from documentary sources (collection of recipes, materials and methods used) and through an experimental phase (accelerated aging tests, biodegradation and mechanical behaviour on lining samples).

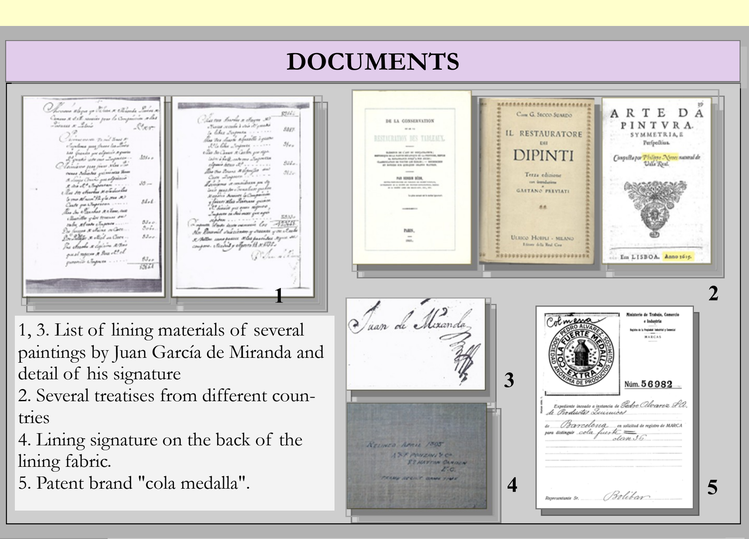
Methodology: We have focused on the information obtained in treatises, archives, reports, invoices and applications for registration of trademarks and patents of some materials, consulted in various museums and institutions. This information has been enlarged and compared to the analyses performed on lining adhesives used in some case studies selected for the project in these institutions because of their characteristics. (See table).

DOCUMENTARY STUDY

SOURCES CONSULTED	ARCHIVES VIEWED	ANALYSIS CARRIED
Primary sources: Visual examination of the study cases Adhesives Analysis Old and current photographs of the works studied New photographs taken by the team. **Secondary sources:** Treatises Archives Inventories Conservation reports (museums, IPCE, PN, conservators) Questionnaires developed for the project Publications Applications for registration of trademarks and patents	Palacio Real (Patrimonio Nacional). Madrid Archive of Artwork restored. IPCE Archive of Restoration, Library and archive of Museo del Prado Archives of the Patent and Trademark Office (Ministry of Industry, Spain) Archive of Restoration of Faculty of Fine Arts. UCM Newspapers archives National Gallery of Denmark Museo de Arte Antiga (Lisboa) Archive of Real Academia de Bellas Artes de San Fernando (RABASF), Madrid Museum Thyssen-Bornemisza, Departament of Restoration Restoration Service. Diputación Foral de Álava	**Identification adhesive..** Infrared Fourier Transform Spectroscopy (FTIR) Scanning electron microscopy (SEM-EDXS) **Identification binder:** Gas chromatography (GC-MS) **Identification fibers** Optical microscopy (OM) **Biological analysis** **Identification of preparation and priming** FTIR **Identification of pigments** Energy-dispersive X-ray spectroscopy (EDX) Scanning Electron Microscopy (SEM) Radiography (RX)

LENGUAGE	WORD
Spanish:	gacha
Italian:	colla di pasta
French:	colle de pâte
English:	flour paste, starch paste, glue paste
Portuguese:	cola pasta
Danish:	lim pasta
Dutch:	lijmpasta

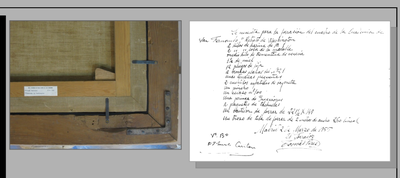
DOCUMENTS



1, 3. List of lining materials of several paintings by Juan García de Miranda and detail of his signature
2. Several treatises from different countries
4. Lining signature on the back of the lining fabric.
5. Patent brand "cola medalla".

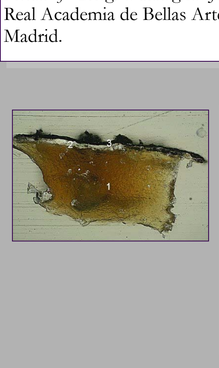
STUDY CASES

Portait of George Washington. Josef Perovani, 1796. Real Academia de Bellas Artes de San Fernando, Madrid.



- Back lining painting, where it can see the adhesion of excess fabric and corners, as well as good condition of the lining support.

- Note by Tomas Pérez, liner of the Prado, museum, ordering of materials for lining the portrait of G. Washington (Archive of Museo Nacional del Prado)

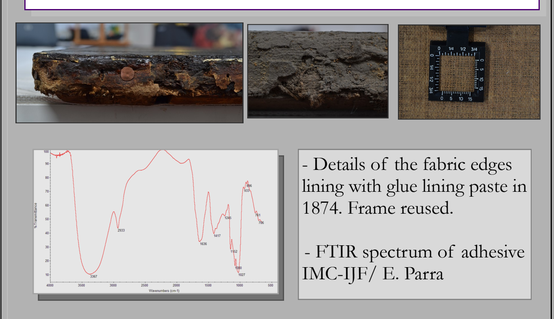


- Left: SEM-EDXS sample of lining glue paste, corresponding to the left arm sleeve: Nº 1 lining glue paste; nº 2 stucco layer; nº3, brushwork in black

- Right: FTIR spectrum of adhesive

(E. Parra: *Larco Química y Arte.* (Restoration report: Restauro Albayalde)

A Virgem circundada de flores. Jan Van kessel (1648). Museum National of Art Antiga. Back with the lining and the old frame with the wax seal of the collection of Carvalhido Count. (Information provided by Carlota Barbosa)



- Details of the fabric edges lining with glue lining paste in 1874. Frame reused.

- FTIR spectrum of adhesive IMC-IJF/ E. Parra

COMPONENTS OF RECIPES OBTAINED FROM THE DOCUMENTS CONSULTED AND THE ANALYSIS PERFORMED.

BASIC COMPONENTS / Type / Function / Name-Brand

- SKIN GLUE: Rabbit, Cartilage, technical gelatin/ Adhesive/ of the Medalla (extra strong glue D. Pedro Álvarez SA Chemical..) - from Salamanca
- FLOUR: Flower, wheat, rye, refined Candeal/ Thickener, adhesive / Manitoba, El Corte Ingles, DOM, Gallo ...
- WATER: Tap, deionized / Diluent

ADDITIVES

- VINEGAR: From wine / disinfectant, surfactant, pH corrector.
- -HONEY-MOLASSES-SUGAR / SYRUP OR MARPLE SYRUP, (employed in the National Gallery of Denmark in the 1st half of the 20th century). /Plasticizer

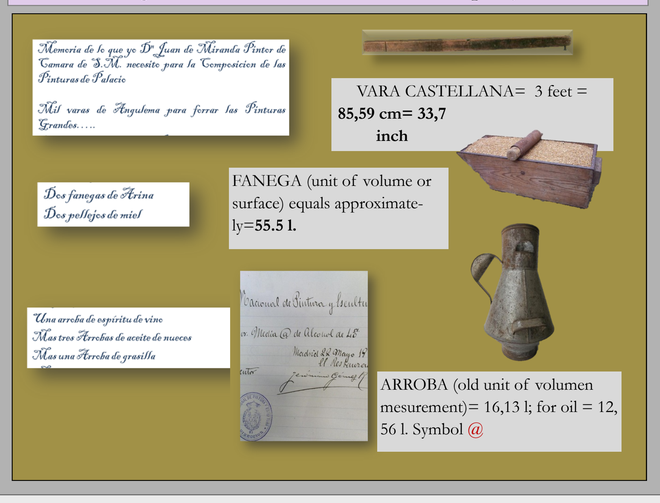
DISINFECTANT:

- GARLIC / Disinfectant, adhesion strengthening, siccative (old recipes. Andrés de la Calleja, recipes s XIX and 1st half XX . Museo del Prado)
- Sodium Pentachlorophenate - Alum / Nipagin (sodium salt of p-hydroxybenzoate) -."Micospec" (econazole nitrate) in ethanol - quaternary ammonium salts - Sodium Fluoride - Benzoic acid -Verdigris (Denmark s. XIX).

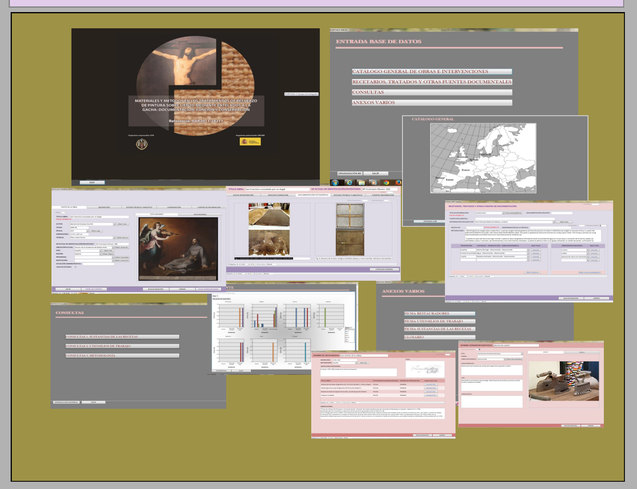
OTHER COMPONENTS

- BEER / Diluent (François-Toussaints recipes, Hacquin)
- MUCILAGES LINEN GRAIN: French recipes / Plasticizer
- "GRASILLA" Goma juniper. (Ground yellowish resin used for the preparation of varnishes) called this way by Spanish authors of s. XVI) / strengthen adhesiveness. (recipes of Juan García de Miranda)
- LINSEED OIL: Plasticizer
- TREMENTINA VENICE / Strengthening tack, plasticizer
- OX GALL: liquid or paste / Surfactant, wetting.

SAMPLE RECIPES, MEASURES AND EQUIVALENCES (Juan García de Miranda. S. XVIII. Spain)



SCREENS DATABASE



RESULTS AND CONCLUSIONS

The research has allowed to know issues as: the list of paintings saved from the important and significant fire in the Alcázar of Madrid in 1734, their conservation status and which of them were considered for their restoration (Inventory of Paintings of the Year 1747, entrusted to Juan Garcia Miranda and Andrés de la Calleja); the materials used in the first linings known in Spain (*Memoria de lo que yo D. Juan de Miranda Pintor de Cámara de S.M. necesito para la Composición de las Pinturas de Palacio, 1735*); terms, signs and measurement systems used; the current conservation status of paintings lined in the past; techniques and methodologies used, status, professional and personal relationships between the artists and restorers in workshops and within institutions; variables in the different recipes used in Europe; the current conservation status of the artworks treated with this procedure, etc. In addition, through the nomenclature used of various materials (trademarks, specifications for production, etc.) it has been able to determine more precisely the nature of each ingredient and its behaviour in the glue paste. (See diagram).

Likewise, the comparison between the collection and documentation of many recipes, and the analysis of the lining adhesives of some case studies developed with some partner museums, has allowed to check and verify scientifically the data of the documents consulted. It has been developed a database which has facilitated the organization and optimization of the information and has allowed to perform statistic queries of historical periods and countries, materials, tools and methodologies used.

RESEARCH TEAM

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COLABORATE:

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